



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
LSASD/HWSB/HWSS
2890 Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No.: 49917

Site: New Cassel/Hicksville GW Contamination

Number of Samples: 9 (GW), 4 (FB), 2 (TB)

Analysis: TVOA, TVOA-SIM (MA 3138.0),
SVOA, SVOA-SIM (MA 3139.0)
PEST (MA 3126.0)

SDG No.: BGJK4

Laboratory: Analytical Resources, LLC

Sampling dates: 03/28/2022 - 03/29/2022

Validation SOP: QA-HWSS-A-004 (Rev 0),
QA-HWSS-A-005 (Rev 0), QA-HWSS-A-007 (Rev 0)

QAPP:

Contractor: HDR APTIM

Reference: DCN: 10256504-0, April 2022

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

None

Major Findings:

The following samples have analytes that have been qualified "J", "J+" or "J-".

TVOA/TVOA-SIM: BGJL2, BGJL4

SVOA/SVOA-SIM: BGJK4, BGJK5, BGJK6, BGJK7, BGJK8, BGJK9, BGJL0, BGJL2, BGJL3, BGJL4, BGJL5, BGJL6, BGJL7

PEST: BGJK5, BGJK7, BGJL0, BGJL2, BGJL3, BGJL4, BGJL5, BGJL6, BGJL7

Minor Findings:

One or more analytes in one or more samples are qualified "J" due to results between MDL and CRQL.

COMMENTS: Per request in ARF, Summary Reports were created without project action levels.

Reviewer Name(s): Archana Mirle/Steffanie Tobin/ Raxa Shelley

Approver's Signature:

Date: 05/16/2022

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: TVOA/TVOA-SIM (MA# 3138.0)

The current SOP QA-HWSS-A-004 (Rev 0) March 2022, USEPA Region II for the evaluation of Trace Volatile organic data, and all related Change Request Forms (CRF) for this SOP, generated through Statement of Work SFAM01.1, and any future editorial revisions of SFAM01.1 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report. Tentatively Identified Compounds (TICs) for TVOA organic fraction is not validated.

1. HOLDING TIME AND PRESERVATION:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those detected and non-detected analytes in the samples whose holding time has been exceeded will be qualified as per Table 2 of QA-HWSS-A-004 (Rev 0). Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. DEUTERATED MONITORING COMPOUNDS (DMC's):

All samples are spiked with DMC compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured DMC recovery limits were outside the specified limits in Table 10 of SOW SFAM01.1 (Exhibit D, trace level volatile analysis, Section 17), qualifications were applied as per Table 8 of the SOP QA-HWSS-A-004 (Rev 0) to all the samples and analytes as shown below.

The following samples have DMC percent recoveries less than the primary minimum criteria but greater than or equal to the expanded minimum criteria. Detects are qualified as estimated J-. Non-detects are qualified as estimated UJ.

Chloroform-d BGJL3, BGJL4

1,1-Dichloroethane, Bromochloromethane, Chloroform, Dibromochloromethane, Bromoform

1,2-Dichloroethane-d4 BGJL3

Trichlorofluoromethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, Methyl acetate, Methylene chloride, Methyl-tert-butyl ether, 1,1,1-Trichloroethane, Carbon tetrachloride, 1,2-Dibromoethane, 1,2-Dichloroethane

trans-1,3-Dichloropropene-d4 BGJL2

cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 1,1,2-Trichloroethane

1,1,2,2-Tetrachloroethane-d2 BGJL3

1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

1,2-Dichlorobenzene-d4 BGJL3

Chlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene



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The following samples have DMC percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Non-detects re not qualified.

trans-1,3-Dichloropropene-d4 BGJL4, BGJL5
cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 1,1,2-Trichloroethane

TVOA-SIM:

The following samples have DMC percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Non-detects re not qualified.

1,1,2,2-Tetrachloroethane-d2 BGJL5
1,2-Dibromo-3-chloropropane

Toluene-d8 BGJL5
trans-1,3-Dichloropropene

3. MATRIX SPIKE/ MATRIX SPIKE RECOVERY:

MS/MSD data is generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other QC criteria for additional qualification of data.

Not applicable

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the amount of contamination present in the QA blanks, the analytes are qualified as per Table 7 of SOP QA-HWSS-A-004 (Rev 0).

A) Method blank contamination:

TVOA:

No problems were found for this criterion.

TVOA-SIM:

The following samples have analyte results reported less than CRQL. The associated method blank results are less than CRQL. Detects are qualified U. Sample results have been reported at CRQL.

cis-1,3-Dichloropropene BGJL1, BGJL7, BGJL6, BGJL4, BGJL4DL, BGJL5, BGJL5DL, BGJL2, BGJL3, BGJL8, BGJK9, BGJK9DL, BGJK8, BGJK6, BGJK7, BGJK5, BGJK5DL, BGJK4, BGJK4DL, BGJL0

B) Field or rinse blank contamination: BGJL0/BGJL3/BGJK7/BGJL6

TVOA:



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The following samples have common laboratory contaminant analyte results reported greater than or equal to the CRQL but less than 2x method blank result. The associated rinse/field blank result is greater than or equal to the CRQL. Reported results of the analyte in the sample have been qualified U.

Acetone BGJL7, BGJL5, BGJL2, BGJK9, BGJK8,

The following samples have analyte results reported less than the CRQL. The associated rinse/field blank result is greater than or equal to the CRQL. Detects are qualified U. Sample results have been reported at the CRQL.

Acetone BGJL4, BGJ5DL, BGJL7DL, BGJK5, BGJK4, BGJK6

Trichloroethene BGJK6

The following samples have analyte results reported less than the CRQL. The associated rinse/field blank result is less than the CRQL. Detects are qualified U. Sample results have been reported at the CRQL.

Toluene BGJL4, BGJL2, BGJK9, BGJK6

TVOA-SIM:

No additional qualification is required due to the field/rinse blank contamination because the contamination in the rinse/field blank has been qualified in the method blank contamination section.

C) Trip blank contamination: BGJL1/BGJL8

TVOA:

No additional qualification is required due to the trip blank contamination because the contamination in the trip blank has been qualified in the field blank contamination section.

TVOA-SIM:

No additional qualification is required due to the trip blank contamination because the contamination in the trip blank has been qualified in the method blank contamination section.

D) Storage Blank associated with TVOA samples only:

TVOA:

The following samples have analyte results reported less than the CRQL. The associated storage blank result is less than the CRQL. Detects are qualified U. Sample results have been reported at the CRQL.

Tetrachloroethene BGJK5DL

TVOA-SIM:

No additional qualification is required due to the storage blank contamination because the contamination in the storage blank has been qualified in the method blank contamination section.

E) Tentatively Identified Compounds:

Tentatively Identified Compounds (TICs) for TVOA organic fraction are not validated.



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5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene. If the mass calibration is in error, all associated data will be classified as unusable "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. All analytes for initial, ICV and continuing calibration should meet the minimum RRF criteria as listed in Table 4 of SOW SFAM01.1 (Exhibit D, trace level volatile analysis, Section 17). If RRF is less than minimum RRF specified in the Table 4, all detects in the sample will be qualified as estimated "J" and non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration.

Percent RSD must be less than maximum %RSD in Table 4 of SOW SFAM01.1 (Exhibit D, trace level volatile analysis, Section 17) for all target analytes. For the opening or closing CCV %D must be within the inclusive opening or closing maximum %D limits as listed in Table 4 of SOW SFAM01.1 (Exhibit D, trace level volatile analysis, Section 17) for all Target compounds. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are qualified as estimated, "J" and Non-detects are qualified "UJ" for %D values outside criteria only. If %RSD exceeds QC criteria, detects are qualified as "J" and non-detects are not qualified. Qualifications were applied to the samples and analytes as shown below.

TVOA:

The following samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detects are qualified as estimated J. Non-detects are not qualified.



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Dibromochloromethane BGJL2DL, BGJL2DL2, BGJL3, BGJL4DL, BGJL5DL, BGJL6, BGJL7DL

1,2-Dibromoethane BGJL2DL, BGJL2DL2, BGJL3, BGJL4DL, BGJL5DL, BGJL6, BGJL7DL

The following samples are associated with an ICV with target analyte % Difference exceeding criteria. Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

cis-1,3-Dichloropropene BGJK4, BGJK5, BGJK6, BGJK7, BGJK8, BGJK9, BGJL0, BGJL1, BGJL2, BGJL4, BGJL5, BGJL7, BGJL8

The following sample is associated with a closing CCV with % Difference exceeding criteria. Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

Acetone BGJL3

TVOA-SIM:

No problems were found for this criterion.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count and retention time must be in the range as specified in Table 10 of SOP QA-HWSS-A-004 (Rev 0) of the associated continuing calibration internal standard area. If the internal standard area count and retention time were outside the specified limits in Table 10 of SOP QA-HWSS-A-004 (Rev 0), qualifications will be applied to the results for compounds quantitated with that IS as per Table 10 of SOP QA-HWSS-A-004 (Rev 0). Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

8. FIELD DUPLICATES: BGJK4/BGJK5

No problems were found for this criterion.

9. COMPOUND IDENTIFICATION:

Target compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within a window of 0.06 RRT units of the standard compound and have ion spectra which has a ratio of the primary and secondary m/z intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

10. CONTRACT PROBLEMS NON-COMPLIANCE:



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TVOA:

Initial calibration percent relative standard deviation (%RSD) is outside criteria for the following analytes.

Dibromochloromethane and 1,2-Dibromoethane

TVOA-SIM:

None.

11. FIELD DOCUMENTATION:

No problems were identified.

12. OTHER PROBLEMS:

TVOA:

BGJL2: cis-1,2-Dichloroethene result was over the calibration range for initial analysis for sample BGJL2. Dilution level (BGJL2DL) analysis was performed but cis-1,2-Dichloroethene result was less than the CRQL. Using professional judgement and being conservative number, initial analysis result is better result. Therefore, cis-1,2-Dichloroethene result is reported from initial analysis and qualified "J" as the reported value is over the calibration range.

TVOA-SIM:

As per SDG narrative, the analyst noted samples BGJK4 (22C0516-01), BGJK5 (22C0516-02), BGJK9 (22C0516-06) and BGJL2 (22C0524-01), BGJL4 (22C0524-03), BGJL5 (22C0524-04) and BGJL7 (22C0524-06) were run at dilutions which were determined from the high levels of contamination in the full scan runs. The analyst tried to run SIM at the same or less dilution as the full scan runs. The high concentration hits are not analytes requested in the SIM runs but the levels do affect both surrogate and internal standard recoveries and instrument performance.

So, the samples, BGJK5, BGJK9 and BGJL5 have initial analysis run at 10x dilutions and dilution run BGJK5DL, BGJK9DL and BGJL5DL at 10X dilution, sample BGJL4 has initial analysis run at 20x dilution and dilution run BGJL4DL at 20x dilution and sample BGJK4 initial run has 10x dilution and dilution run BGJK4DL at 1x.

Internal Standard Area and Retention Time reported on Data Validation Report IS and RT summary form do not match with hard copy raw data quantitation report for samples and blanks. Based on a review of the raw data, it appears that IS area and RT are not reported with correct associated IS and are reported incorrectly in the summary form from SMO Portal. Additionally, the order of the second and third IS reported incorrectly on IS and RT summary form. It should be reported as in order of first IS 1,4-Difluorobenzene, second IS Chlorobenzene-d5 and third IS 1,4-Dichlorobenzene-d4. The Internal Standard Area and Retention Time for this SDG were manually checked and were within the required limits.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used. See summary report and EDD for applicable samples and analytes.

TVOA:

The following dilution samples were only used for one or more analytes.

BGJK5DL, BGJL5DL, BGJL4DL, BGJL2DL, BGJL2DL2, BGJK9DL, BGJL7DL, BGJK4DL



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The following initial analysis sample was not used.
BGJL3

TVOA-SIM:

The initial analysis of the following samples was not used.
BGJL4, BGJK9, BGJK5, BGJK4, BGJL5

ANALYSIS: SVOA/SVOA-SIM (MA# 3139.0)

The current SOP QA-HWSS-A-005 (Rev 0) April 2022, USEPA Region II for the evaluation of Semi-Volatile organic data, and all related Change Request Forms (CRF) for this SOP, generated through Statement of Work SFAM01.1, and any future editorial revisions of SFAM01.1 has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report. Tentatively Identified Compounds (TICs) for BNA organic fraction is not validated.

1. HOLDING TIME AND PRESERVATION:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those detected and non-detected analytes in the samples whose holding time has been exceeded, will be qualified as per Table 2 of SOP QA-HWSS-A-005 (Rev 0). Qualifications were applied to the samples and analytes as shown below.

SVOA:

The following samples were received at temperatures > 6°C. The extraction was performed within the extraction technical holding time and the extract was analyzed within the analysis technical holding time. Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

BGJK5, BGJK7, BGJL0

SVOA-SIM:

The following samples were received at temperatures > 6°C. The extraction was performed within the extraction technical holding time and the extract was analyzed within the analysis technical holding time. Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

BGJK5, BGJK7, BGJL0, BGJL0DL

2. DEUTERATED MONITORING COMPOUNDS (DMCs):

All samples are spiked with DMC compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured DMC recovery limits were outside the specified limits in Table 11 of SOW SFAM01.1 (Exhibit D, semivolatile analysis, Section 17), qualifications were applied as per Table 8 of SOP QA-HWSS-A-005 (Rev 0) to all the samples and analytes as shown below.

SVOA:

The following samples have DMC percent recoveries less than the primary minimum criteria but greater than or equal to the expanded minimum criteria. Detects are qualified as estimated J-. Non-detects are qualified as estimated UJ.



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4-Chloroaniline-d4 BGJL7, BGJL7DL
4-Chloroaniline

The following samples have DMC percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Non-detects are not qualified.

1,4-Dioxane-d8 BGJL6, BGJL7
1,4-Dioxane

Pyrene-d10 BGJK9
Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene

SVOA-SIM:

The following samples have DMC percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Non-detects are not qualified.

Fluoranthene-d10 BGJL0
Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene,
Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene,
Benzo(g,h,i)perylene

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATES (MS/MSD):

MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not applicable

4. LABORATORY CONTROL SAMPLE (LCS):

LCS data is generated to determine the long-term precision and accuracy of the analytical method. The LCS may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

SVOA:

Laboratory Control Sample analysis was performed, and the Lab stated in the SDG narrative that the recoveries for 3,3'-dichlorobenzidine and Hexachlorocyclopentadiene in the LCS were outside the acceptance limits. There are no specified percent recovery limits for LCS from the site-specific QAPP or current SOW [SFAM01.0 (05/2019) Exhibit D section 12.3.5.4 of D-70/SVOA]. However, the LCS met the technical acceptance criteria (DMC & IS recoveries) in the SOW. No action was taken.

SVOA-SIM:

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip



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blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the amount of contamination present in the QA blanks, the analytes are qualified as per Table 7 of SOP QA-HWSS-A-005 (Rev 0).

A) Method blank contamination:

No problems were found for this criterion.

B) Field or rinse blank contamination: BGJK7, BGJL0, BGJL3, BGJL6

SVOA:

The rinse and filed blanks contain laboratory contaminant, 4-Chloro-3-methylphenol greater than the CRQL. 4-Chloro-3-methylphenol was not detected in the associated samples. Therefore, no qualification was applied due to field or rinse blank contamination.

SVOA-SIM:

The rinse and filed blanks contain laboratory contaminant, Naphthalene less than the CRQL. Naphthalene was not detected in the associated samples. Therefore, no qualification was applied due to field or rinse blank contamination.

C) Tentatively Identified Compounds:

Tentatively Identified Compounds (TICs) for SVOA organic fraction are not validated.

6. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for Semi-volatiles is Decafluorotriphenyl-phosphine (DFTPP). If the mass calibration is in error, all associated data will be classified as unusable "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. All analytes for initial calibration, ICV and continuing calibration should meet the minimum RRF criteria as listed in Table 5 of SOW SFAM01.1 (Exhibit D, semivolatile analysis, Section 17), If RRF is less than minimum RRF as specified in Table 5, all detects in the sample will



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be qualified as estimated "J" and non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance.

Percent RSD must be less than maximum %RSD in Table 5 of SOW SFAM01.1 (Exhibit D, semivolatiles analysis, Section 17) for all target analytes. For the ICV/opening or closing CCV %D must be within the inclusive opening or closing maximum %D limits as listed in Table 5 of SOW SFAM01.1 (Exhibit D, semivolatiles analysis, Section 17) for all Target compounds. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are qualified as estimated, "J" and Non-detects are qualified "UJ" for %D values outside criteria only. If %RSD exceeds QC criteria, detects are qualified as "J" and non-detects are not qualified. Qualifications were applied to the samples and analytes as shown below.

The following analytes in the sample shown were qualified for %RSD and %D:

SVOA:

The following samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detects are qualified as estimated J. Non-detects are not qualified.

2,4-Dinitrophenol BGJK9DL, BGJL4DL, BGJL6DL, BGJL7DL

Dibenzo(a,h)anthracene BGJK4, BGJK5, BGJK6, BGJK7, BGJK8, BGJK9, BGJL0, BGJL2, BGJL3, BGJL4, BGJL5, BGJL6, BGJL7

The following samples are associated with an ICV with target analyte % Difference exceeding criteria. Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

2,6-Dinitrotoluene BGJK9DL, BGJL4DL, BGJL6DL, BGJL7DL

3-Nitroaniline BGJK9DL, BGJL4DL, BGJL6DL, BGJL7DL

2,3,4,6-Tetrachlorophenol BGJK9DL, BGJL4DL, BGJL6DL, BGJL7DL

N-Nitrosodiphenylamine BGJK4, BGJK5, BGJK6, BGJK7, BGJK8, BGJK9, BGJL0, BGJL2, BGJL3, BGJL4, BGJL5, BGJL6, BGJL7

The following samples are associated with a closing CCV with % Difference exceeding criteria. Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

1,4-Dioxane BGJK4, BGJK5, BGJK6, BGJK7, BGJK8, BGJK9, BGJL0, BGJL2, BGJL3, BGJL4, BGJL5, BGJL6, BGJL7

SVOA-SIM:



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No problems were found for this criterion.

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count and retention time must be in the range as specified in Table 10 of SOP QA-HWSS-A-004 (Rev 0) of the associated continuing calibration internal standard area. If the internal standard area count and retention time were outside the specified limits in Table 12 of SOP QA-HWSS-A-005 (Rev 0), qualifications will be applied to the results for compounds quantitated with that IS as per Table 12 of SOP QA-HWSS-A-005 (Rev 0). Qualifications were applied to the samples and analytes as shown below.

SVOA:

The following sample has internal standard area response greater than or equal to expanded minimum criteria and less than primary minimum criteria. Detects are qualified as estimated J+. Non-detects are qualified as estimated UJ.

Chrysene-d12 BGJK9

Fluoranthene, Pyrene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Benzo(a)anthracene, Bis(2-ethylhexyl)phthalate, Chrysene

SVOA-SIM:

The following samples have internal standard area response greater than or equal to expanded minimum criteria and less than primary minimum criteria. Detects are qualified as estimated J+. Non-detects are qualified as estimated UJ.

Chrysene-d12 BGJK9, BGJK9DL, BGJL0

Fluoranthene, Pyrene, Benzo(a)anthracene, Bis(2-ethylhexyl)phthalate, Chrysene

Perylene-d12 BGJK9, BGJK9DL, BGJL0, BGJL0DL, BGJL7, BGJL7DL

Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(g,h,i)perylene

9. FIELD DUPLICATES: BGJK4/BGJK5

No problems were found for this criterion.

10. COMPOUND IDENTIFICATION:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within 0.06 RRT units of the standard compound and have ion spectra which have a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

11. CONTRACT PROBLEMS NON-COMPLIANCE:



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SVOA:

The %D of 3-Nitroaniline in the ICV associated with BGJK9DL, BGJL4DL, BGJL6DL and BGJL7DL was greater than 40% QC limits which is non-compliance with the SOW [SFAM01.0 (05/2019) Exhibit D section 9.4.5.3 of D-29/SVOA]. However, 3-Nitroaniline was not detected in the above samples. No action was taken.

SVOA-SIM:

The recovery of Fluoranthene-d10 for BGJL0 was outside the QC limit and the lab re-analyzed the initial sample extract. According to the current SOW [SFAM01.0 (05/2019) Exhibit D section 11.3.5 of D-59/SVOA and section 11.4.4.1 of D-60/SVOA], BGJL0 should be re-extracted and re-analyzed. However, no qualification was required since all analytes associated with Fluoranthene-d10 were non-detected. No action was taken.

12. FIELD DOCUMENTATION:

No problems were identified.

13. OTHER PROBLEMS:

SVOA: The re-analyses of samples BGJK9, BGJL6 and BGJL7 were in-corrected labeled as BGJK9DL, BGJL6DL and BGJL7DL in EDD and Form I. These re-analyses should be labeled as BGJK9RE, BGJL6RE and BGJL7RE as required in SOW [SFAM01.0 (05/2019) Appendices B-3 TABLE 1. CODES FOR LABELING DATA]. Lab narrative also indicates these are re-analyses. Therefore, it should be understood that the results for BGJK9, BGJL6 and BGJL7 in the deliverable are from re-analyses not diluted analyses.

Please note that BGJL4DL was labeled correctly (diluted due to 4-Dioxane was detected outside the calibration range in the initial analysis).

SVOA-SIM:

The re-analyses of samples BGJK9, BGJL0 and BGJL7 were in-corrected labeled as BGJK9DL, BGJL0DL and BGJL7DL in EDD and Form I. These re-analyses should be labeled as BGJK9RE, BGJL0RE and BGJL7RE as required in SOW [SFAM01.0 (05/2019) Appendices B-3 TABLE 1. CODES FOR LABELING DATA]. Lab narrative also indicates these are re-analyses. Therefore, it should be understood that the results for BGJK9, BGJL0 and BGJL7 in the deliverable are from re-analyses not diluted analyses.

14. DILUTIONS, RE-EXTRACTIONS and REANALYSIS:

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used. See summary report and EDD for applicable samples and analytes.

SVOA:

The following dilution sample was only used for one or more analytes.
BGJL4DL

The initial analyses of the following samples were not used.
BGJK9, BGJL6, BGJL7



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SVOA-SIM:

The original analyses and re-analysis of the following samples were not used.
BGJK9, BGJL0 and BGJL7DL

15. PERCENT SOLIDS:

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids out of criteria will be qualified. Qualifications were applied to the samples and analytes as shown below.

Not applicable

ANALYSIS: PEST (MA # 3126.0)

The current SOP QA-HWSS-A-007 (Rev 0) April 2022, USEPA Region II for the evaluation of Pesticides data, and all related Change Request Forms (CRF) for this SOP, generated through Statement of Work SFAM01.1, and any future editorial revisions of SFAM01.1 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those detected and non-detected analytes in the samples whose holding time has been exceeded will be qualified as per Table 2 of QA-HWSS-A-007 (Rev 0). Qualifications were applied to the samples and analytes as shown below.

The following samples are received at temperatures > 6°C (7.3°C, 7.8°C, 7.6°C). Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

BGJK5, BGJK7, BGJL0

2. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate recovery were outside the specified limits in Table 10 of SOW SFAM01.1 (Exhibit D, pesticides analysis, Section 17), qualifications were applied as per Table 7 of SOP QA-HWSS-A-007 (Rev 0) to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.



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The relative percent difference (RPD) between the following matrix spike and matrix spike duplicate recoveries is outside criteria. Detects are qualified as estimated J. Non-detects are not qualified.
gamma-BHC (Lindane) BGJK8

4,4'-DDT BGJK8

4. LABORATORY CONTROL SAMPLE (LCS):

LCS data is generated to determine the long-term precision and accuracy of the analytical method. The LCS may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method/Instrument blank contamination:

No problems were found for this criterion.

B) Field or rinse blank contamination: BGJK7, BGJL0, BGJL3, BGJL6

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

If %RSD exceeds 20% for all analytes except for alpha-BHC 25%, delta-BHC 25%, and Toxaphene 30%, detects are qualified "J" and non-detects are not qualified. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) The Percent Difference (%D) for each of the SCP in the PEM used for CCV must be within $\pm 25.0\%$. The Percent Difference (%D) for target analyte in the Calibration Verification Standard (CS3) used for CCV must be within $\pm 25.0\%$. If the %D is not within limits, detects are qualified



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"J" and non-detects are qualified "UJ". Qualifications were applied to the samples and analytes as shown below.

The following samples are associated with a closing CCV with % Difference exceeding criteria. Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

Endrin BGJL0, BGJL2, BGJL3, BGJL4, BGJL5, BGJL6, BGJL7

7. FIELD DUPLICATES: BGJK4/BGJK5

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

Percent Differences	Qualifier
0% - 25%	No qualification
26% - 200%	J
>200% (interference detected)	NJ
>200% (interference not detected)	NJ

The following samples were qualified for % difference on the two columns.

None

9. CONTRACT PROBLEMS NON-COMPLIANCE:

Continuing Calibration Verification (CCV) PEM standard did not meet the technical acceptance criteria of SOW [SFAM01.0 (05/2019) Exhibit D Section 9.4.5 and section 9.4.6.4 of D-30/PEST). Reanalysis corrective action was not performed for the samples associated to a CCV PEM standard in which Endrin %D were outside SOW specification. This issue was also reported in the CCS Report.

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

None

12. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used. See summary report and EDD for applicable samples and analytes.

13. PERCENT SOLIDS:



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The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids out of criteria will be qualified. Qualifications were applied to the samples and analytes as shown below.

Not applicable